The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ODDVIN REISO,
ULF TUNDAL, JOHN ERIK HAFSAS
and
ODDGEIR SJOTHUN

_____

Appeal No. 2002-1752
Application No. 09/180,464

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HEARD: January 8, 2003

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Before WARREN, DELMENDO and POTEATE, ***Administrative Patent Judges***.

POTEATE, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 11, 12, 14-16, 27 and 28, which are all of the claims remaining in the application.

Claim 27, the sole independent claim, is representative of the subject matter on appeal and is reproduced below:

27. A method for producing an alloy from an aluminum eutectic alloy system, in order to form a workpiece, which comprises, prior to any rolling, extrusion or other working of the alloy, casting and cooling an aluminum alloy melt to form a workpiece, homogenizing and cooling the alloy in the workpiece, heating the workpiece to a temperature in the alloy above the solubility temperature of the precipitated phases in the alloy matrix, keeping the workpiece at the temperature above the solubility temperature of the precipitated phases in the matrix until the phases have dissolved, cooling the workpiece to the desired processing temperature at a cooling rate greater than 400°C/h and less than 55,000°C/h which is rapid enough to avoid most of the precipitation of the said phases and slow enough to avoid most of the precipitation of dispersoid particles.

The references relied on by the examiner are:

Reiso	4,909,858	Mar. 20, 1990

ASM Handbook Volume 4 Heat Treating (ASM Handbook), ASM International, 1991, 851-853

GROUND OF REJECTION

Claims 11, 12, 14-16, 27 and 28 stand rejected under 35 U.S.C. § 103 as unpatentable over Reiso in view of the ASM Handbook.

We reverse.

BACKGROUND

The invention relates to a method of producing alloys from eutectic alloy systems in order to form workpieces for forging, cold flow pressing, rolling or extrusion purposes. Specification, page 1, first paragraph. A known method for producing an aluminum alloy is disclosed in Reiso.[1] Reiso's method includes the steps of casting an ingot or billet, homogenizing and then cooling the billet, reheating the billet to a temperature above the solubility temperature of the precipitated phases in the aluminum matrix, and then holding the billet at this temperature until the phases are dissolved. Reiso, claim 1. These method steps are also used in the method of the invention. See claim 27; Appeal Brief, page 5, second paragraph.

The final step in Reiso's claimed method requires quick cooling the billet to a desired extrusion temperature such that new precipitation of phases in the alloy structure is prevented. See Reiso, claim 1. According to appellants, a disadvantage of

[1] Oddvin Reiso, the named inventor, is also one of the named inventors of the present invention. See Appeal Brief, Paper No. 18, received December 17, 2001, page 5, second paragraph.

Reiso's method is that if the alloy is cooled too rapidly before extrusion, the properties of the finished product may deteriorate. Specification, page 2, third paragraph. For example, the finished product may exhibit a reduction in mechanical properties after hardening. ***Id.***

According to appellants,

> [t]he present invention is based on new knowledge on alloys from eutectic alloy systems; it has been found that if the cooling rate during the production of the alloy is too high, a new precipitation reaction, which has not previously been demonstrated, will have a major effect on the properties of the alloy, such as tensile strength and possibly the anodising properties, in the finished product.

Id., page 5, second paragraph. More specifically, appellants have found that if the cooling rate during production of the alloy is too high, the resultant extrudates have a high number of small (10-30 mm) dispersoid particles. Appeal Brief, page 4, third paragraph. The dispersoid particles have a negative impact on the tensile strength in the resultant extrudates. ***Id.*** at paragraph 4.

Appellants have discovered that it is possible to obtain extrudates having high tensile strength values by cooling the workpiece, after the reheating step, "at a cooling rate

greater than 400°C/h and less than 55,000°C/h which is rapid enough to avoid most of the precipitation of the said phases and slow enough to avoid most of the precipitation of dispersoid particles." Claim 27; specification, page 6, last paragraph.

DISCUSSION

The initial burden of presenting a ***prima facie*** case of obviousness rests on the examiner. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The examiner found, and appellants concede, that Reiso teaches the method of claim 27 with the exception of performing the final cooling step (i.e., cooling following reheating) at the rate specified in claim 27. Examiner's Answer, Paper No. 19, mailed February 26, 2002, page 4; Appeal Brief, page 5, second paragraph. According to the examiner, it would have been obvious to one of ordinary skill in the art at the time of appellants' invention to have modified Reiso's final cooling step in view of the teachings in the ASM Handbook to achieve the method of claim 27. See Examiner's Answer, page 5, first paragraph. The facts and reasons relied on

by the examiner in support of her conclusion of obviousness as to claim 27 are set forth on pages 5-8 of the Examiner's Answer.[2]

Appellants urge that the ASM Handbook teaches the importance of cooling after homogenization, but "fails to include any disclosure about the cooling rate subsequent to the reheating step." Appeal Brief, page 5, fourth paragraph. The examiner's response to appellants' argument is as follows:

> The argument that the present invention is allowable over the prior art of record because "the ASM Handbook reference discusses different types of quenching after solution heat treatment, which corresponds to the 'homogenizing' step in Reiso '858 . . ." has not been found persuasive. . . . [H]eating above the solubility temperature of the precipitated phases is also known in the art as heating to a temperature where the alloy is in solid solution, or "solution heating", or "solution heat treating". Solution heat treating is commonly done prior to quenching, wherein quenching is done to preserve a supersaturated structure (see ASM Handbook, pages 851-853, etc.). "Homogenizing" is typically done after casting to eliminate or decrease chemical segregation (to make the structure more homogeneous).

Examiner's Answer, page 10, second paragraph.

[2] The examiner's detailed and organized approach in setting forth the rejection is appreciated.

In order to establish a ***prima facie*** case of obviousness, the examiner must identify a suggestion or motivation to modify the teachings of the cited references to achieve the claimed invention. ***In re Kotzab***, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000). The evidence of a suggestion, teaching or motivation to combine in an obviousness determination may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. ***Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.***, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996).

Although the examiner provides several reasons why one of ordinary skill in the art would have been motivated to modify Reiso in view of the ASM Handbook to achieve the invention as claimed, as pointed out by appellants, each of the examiner's reasons is based on an assumption which is not supported by the prior art. In particular, the examiner's rejection is predicated on her conclusion that the discussion of "quenching" in the ASM Handbook relates to a cooling step performed ***after*** reheating of the workpiece to dissolve precipitated phases. See Examiner's Answer, page 10. However, the examiner fails to identify any

teaching in the prior art which supports her assertions of what is "known in the art" or "commonly done" in producing alloys. ***See In re Thrift***, 298 F.3d 1357, 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002)(***quoting In re Lee***, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1435 (Fed. Cir. 2002))(reliance on "common knowledge and common sense" do not fulfill the requirement to provide reasons in support of findings of obviousness). ***See also, In re Dembiczak***, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)("[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.")

Based on our review of the ASM Handbook, we are in agreement with appellants that the discussion of quenching after solution heat treatment refers to a cooling stage which occurs ***prior to*** reheating of the workpiece to dissolve precipitated phases. See Appeal Brief, page 5, fourth paragraph. In particular, we note that the ASM Handbook refers to precipitation heat treating ***after*** quenching. Page 851, first column, second paragraph. Further, the ASM Handbook notes that "the solid solution formed during solution heat treatment must be quenched

rapidly enough (and without interruption) to produce a supersaturated solution at room temperature -- the optimum condition for precipitation hardening." ***Id.*** at last paragraph. Accordingly we agree with appellants' conclusion that "even if Reiso '858 were combined with the ASM Handbook reference, the result of such combination would still not suggest the presently claimed invention, which requires a particular cooling rate ***after the reheating step***." Appeal Brief, page 5, penultimate paragraph (emphasis added).

In sum, we find that the examiner has failed to establish a ***prima facie*** case of obviousness and the rejection is reversed.

REVERSED

CHARLES F. WARREN Administrative Patent Judge	)	
ROMULO H. DELMENDO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LINDA R. POTEATE Administrative Patent Judge	)	

LRP:psb

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